UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,885	03/06/2002	Babru Samal	0109015/026	2967

7590 02/07/2005

BELL, BOYD & LLOYD LLC
P.O. Box 1135
Chicago, IL 60690-1135

EXAMINER	
LU, FRANK WEI MIN	
ART UNIT	**PAPER NUMBER**
1634	

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/092,885	SAMAL ET AL.	
	Examiner	Art Unit	
	Frank W Lu	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 March 2002* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/6/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The examiner notes that WO 00/77249 in the information disclosure statement filed on March 6, 2002 is not in the English language. This reference fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

2. Claim 11 is objected to because of the following informalities: d), e), and f) in lines 3-5 should be a), b), and c).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 1 and 11 are rejected as vague and indefinite because the goal of the claims (generating five prime biased tandem tag libraries of cDNA) does not match with the method steps of the claims. Please clarify.

6. Claims 6-8 and 16-18 are rejected as vague and indefinite in view of the phrase "are comprised of". For example, if the phrase "are comprised of" means "comprise", it is unclear what means that the released tags comprise less 50 nucleotides. Please clarify.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinzler et al., (US Patent No. 5,866,339, published on February 2, 1999) in view of Eberwine (US Patent No. 5,514,545, published on May 7, 1996).

Note that the phrase "are comprised of" in claims 6-8 and 16-18 are considered as "comprise" in this rejection.

Kinzler *et al.*, teach method for serial analysis of gene expression.

Regarding claims 1-3, Kinzler *et al.*, teach isolating a sample of mRNAs and synthesizing double-stranded cDNAs from the mRNAs (see Figure 1 and column 11, lines 61 and 62, and column 12, lines 1-3) as recited in steps a) and b) of claim 1. Since Kinzler *et al.*, teach to cleave the cDNA with NiaIII (AE) to generate double-stranded cDNA with blunt ends (see Figure 1 and columns 11 and 12), Kinzler *et al.*, disclose blunt-ending the double-stranded cDNAs as recited in step c) of claim 1. Kinzler *et al.*, further teach attaching an adapter molecule (one of two linkers in Figure 1) to the blunt ends of the double stranded cDNAs to form a complex, wherein the adapter molecule is double stranded, synthetic oligonucleotide comprising: a recognition site for a type IIS restriction enzyme (GGGAC for BsmF I recognition site in SEQ ID NO:1), a cloning site for releasing tags to cloning vector (AATT for Tsp509 I cutting site in SEQ ID NO:1), and PCR primer site, digesting the complex with a type IIS restriction enzyme (ie., BsmF I) to form released tag, separating the released tags from the double-stranded cDNAs, concatenating the released tags to form concatenated tags, amplifying the concatenated tags and isolating the concatenated tags as recited in steps d) to f) and i) to k) of claim 1 wherein the type IIs restriction enzyme is BpmI as recited in claims 2 and 3 (see Figure 1 and columns 11 and 12).

Regarding claims 11-13, Kinzler *et al.*, teach isolating a sample of mRNAs and synthesizing double-stranded cDNAs from the mRNAs (see Figure 1 and column 11, lines 61 and 62, and column 12, lines 1-3) as recited in steps a) and b) of claim 11. Since Kinzler *et al.*,

teach to cleave the cDNA with NiaIII (AE) to generate double-stranded cDNA with blunt ends (see Figure 1 and columns 11 and 12), Kinzler *et al.*, disclose blunt-ending the double-stranded cDNAs as recited in step c) of claim 11. Kinzler *et al.*, further teach attaching a first adapter molecule (one of two linkers in Figure 1) to the blunt ends of the double stranded cDNAc to form a first complex wherein the adapter molecule is double stranded, synthetic oligonucleotide comprising: a recognition site for a type IIS restriction enzyme (GGGAC for BsmF I recognition site in SEQ ID NO:1), a cloning site for releasing tags to cloning vector (AATT for Tsp509 I cutting site in SEQ ID NO:1), and PCR primer site, digesting the first complex with a type IIS restriction enzyme (ie., BsmF I) to form first released tag, separating the first released tags from the double-stranded cDNAs, concatenating the first released tags to form first concatenated tags, amplifying the first concatenated tags, isolating the first concatenated tags, digesting the second complex with a type IIS restriction enzyme to form second released tags and separating the second released tags from the double-stranded cDNAs as recited in steps d) to f) and i) to m) of claim 11 wherein the type IIs restriction enzyme is BpmI as recited in claims 12 and 13 (see attached Figure 1 with the examiner's handwritings and column 12). Since claim 11 does not require that the first concatenated tags are different from the second concatenated tags, Kinzler *et al.*, teach concatenating the second tags to form second concatenated tags; amplifying the second concatenated tags; and isolating the second concatenated tags as recited in steps p) to r) of claim 11 (see attached Figure 1 with the examiner's handwritings and columns 11 and 12).

Regarding claims 4, 5, 14, and 15, Kinzler *et al.*, teach that the mRNAs are from mammal and the mRNAs are from human (see column 11, lines 60 and 61).

Regarding claims 6-9 and 16-19, since Kinzler *et al.*, teach that BsmF1 generates a 9 bp

tag and SEQ ID NO: 1 is 43 bp (see column 11, second paragraph and column 12), the released tags taught by Kinzler *et al.*, must be 52 bp (43 bp for SEQ ID NO:1 plus 9 bp tag). Since the phrase "are comprised of" is considered to be "comprising", Kinzler *et al.*, disclose that the released tags are comprised of 50 nucleotides as recited in claims 6 and 16, the released tags are comprised of 36 nucleotides as recited in claims 7 and 17, the released tags are comprised of 32 nucleotides as recited in claims 8 and 18, and the released tags are comprised of at least 20 nucleotides as recited in claims 9 and 19.

Regarding claims 10 and 20, Kinzler *et al.*, teach further comprising sequencing the isolated concatenated tags (ie., clones containing at least 10 tags taught by Kinzler *et al.*, have the isolated concatenated tags) to obtain nucleotide sequence and comparing a known nucleotide sequence (see column 12, lines 28-61 and column 13).

Kinzler *et al.*, do not disclose amplifying the first and second released tags and form first and second amplified tags, and isolating the first and second amplified tags as recited in steps g) and h) of claim 1 and steps g), h), n) and o) of claim 11. However, Kinzler *et al.*, do teach to amplify concatenated tags in order to generate sufficient product for cloning (see column 12, lines 16-27).

Eberwine teaches to generate more mRNA by repeatedly amplifying double stranded cDNA (see column 4, lines 34-55 and Figure 2). The repeatedly amplification of double stranded cDNA must include isolating generated mRNA.

Therefore, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have amplified the first and second released tags to form first and second amplified tags and isolated the first and second amplified tags as recited in

claims 1 and 11 in view of the patents of Kinzler *et al.*, and Eberwine. One having ordinary skill in the art would have been motivated to do so because Eberwine suggests that amplification of the original starting material such as nucleic acid would generate 2000 to 10^6 fold amplification of the original starting material (see column 4, lines 34-55). One having ordinary skill in the art at the time the invention was made would have been a reasonable expectation of success to amplify the first and second released tags to form first and second amplified tags and isolate the first and second amplified tags as recited in steps g) and h) of claim 1 and steps g), h), n) and o) of claim 11 in order to generate sufficient the first and second released tags for following concatenating steps.

Alternatively, if applicant argues that the phrase "are comprised of" means "are", claims 6-8 and 16-18 should be rejected as following.

Therefore, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have performed the method recited in claims 6-8 and 16-18 wherein the released tags are 32-50 nucleotide or less in view of the patents of Kinzler *et al.*, and Eberwine. One having ordinary skill in the art has been motivated to do so because optimization of the length of the released tags by using different type IIs restriction enzymes and adaptor molecules with different length for performing the method recited in claims 6-8 and 16-18 would have been, in the absence of convincing evidence to the contrary, *prima facie* obvious to one having ordinary skill in the art at the time the invention was made. One having ordinary skill in the art at the time the invention was made would have been a reasonable expectation of success to optimize the length of the released tags by using different type IIs restriction enzymes and adaptor molecules with different length. Note that, where the general conditions of a claim

are disclosed in the prior art, it is not inventive, in the absence of an unexpected result, to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (see MPEP 2144.05).

Conclusion

9. No claim is allowed.

10. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CAR § 1.6(d)). The CM Fax Center number is (571)273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Lu, Ph.D., whose telephone number is (571)272-0746. The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached on (571)272-0745.

Any inquiry of a general nature or relating to the status of this application should be directed to the Chemical Matrix receptionist whose telephone number is (703) 308-0196.

Frank Lu
PSA
February 3, 2005

FRANK LU
PATENT EXAMINER